STAT

[redacted]

Ref: 552-OD-211

16 September 1964

STAT [redacted]

Projects 552 & 552A
Progress Report, August 1964

Gentlemen,

Enclosed are three (3) copies each of [redacted] STAT Progress Report on Projects 552 and 552A for the period August 1964. Also, attached is a Review of Meeting, August 17, 1964.

Very truly yours,

STAT [redacted]

President

ARB/de

Encl: (3) P.R. - 4 pp.
(3) Att.I- 3 pp.

Declass Review by NIMA/DOD

STAT

PROGRESS REPORT

For

VERSATILE, HIGH PRECISION STEREO

POINT TRANSFER DEVICE

Period Covered:	August 1964
Dated: 15	15 September 1964
Job No.:	#552 and #552A
Document No.:	OD-209

Approved For Release 2003/01/28 : CIA-RDP78B04747A002900040081-8

#552 - OD-209

PROGRESS REPORT
For
VERSATILE, HIGH PRECISION STEREO
POINT TRANSFER DEVICE

Work in this reporting period has been to assemble and debug mechanical and electrical subassemblies on a unit preceding the Point Transfer Device.

OBJECTIVE ASSEMBLY

The specially made two gang potentiometers on zoom magnifier, for scanning velocity feedback, have been received and installed. Delay here was a result of circuit revision during July. Objective heads, using laser assemblies, are being built now, and should be in test during end of September. A great deal of work has been accomplished to examine vibrations set up by stepping motor drive. System damping is now taking two paths:

1) Attempting to "deaden" carriages over a wide frequency range, especially frequencies below 100 cps.

2) Redesign motor mounts on "Y" drive. Part of problem comes from vibrations in stepping motor itself. Several electrical approaches have been tried, but appear to offer little solution.

STAT

#552 - OD-209

Customer should decide what resolution limit is required by system during scanning. Tests to date have dampened system to approximately 400 l/mm with improvement being difficult. Although the new motor has not been installed, we believe system performance will be little improved with future changes. Understand that there are only a few low frequency areas below 100 cps that degrade performance to 400 l/mm. The balance of frequency spectrum appears virtually equal to standing still.

EYEPIECE ASSEMBLY

Assembly of Point Marking system is now being made. The principle difference with previous eyepiece assemblies is the addition of shutters between operator and each fiber cable. When point mark "Fire" button is depressed, these shutters close and will remain closed for three (3) seconds, even if "Fire" button is released. Since there are very few inefficient reflective paths normal to viewing axis in system, laser light seen by eye will be greatly attenuated. This, and shutter, will assure a high degree of safety for the operator.

The fiber cable problem was resolved with a trip to AO. The matter of concern was the torque resistance of fiber bundle being greater than our specification, which was derived from smaller area cables. Although cables were originally rejected because of sticking in rotation limit mechanism, the present problem is serious only from the point of view of wear and tear on glass fibers themselves during image rotation. AO believes their glass fibers, made within the last two years, will resist the service we are to use. Precautions should be made to keep cables straight where they join eyepiece assembly and from suffering any severe bending forces. Another concern will be to settle extent of imperfections that will be allowed in fiber cables. We believe five (5) broken adjacent multifibers should be limit damage, with other faults on a strictly random arrangement. AO claims this requirement will be very difficult to meet. They have rejected three out of eight fiber

STAT

#552 - OD-209

SUPERSTRUCTURE AND EYEPIECE SUPPORT

Angular adjustment difficulty has been resolved by increasing gear ratio from (30:1 to 300:1.) Gear boxes were returned to vendor for rework. Vertical adjustment to remain as is.

BASE FRAME AND DRIVE MOTORS

Comments on vibration damping efforts may be seen under "Objective Assembly".

VACUUM PLATEN AND MANIFOLDS

Molds were completed and satisfactory sample pieces from manufacturer have been received. Initial pieces are not transparent, but every effort is being made to meet this demand. Vendor will acquire experience with some transparent silicone elastomer that appears appropriate. Properties, such as bond strength and wear resistance, will be considerably inferior to gum rubber used in initial pieces. Glass platens have been modified, and received for first system for initial tests. Holddown system will be assembled by the end of September.

HIGH INTENSITY LIGHT SOURCE

Parts have been received from fabrication and finishing. Assembly is now under way.

ELECTRICAL SCHEMATICS AND WIRING DIAGRAMS

Schematics and wiring diagrams are nearly complete, reflecting all changes recently made in drive circuitry. Hardware in cabinets is being updated incorporating new circuit components.

 STAT

#552 - OD-209

JOY STICK

Harness brackets have been designed and are in manufacture. The delay in completion here was due to search for a flat, multi-conductor cable, already stocked, with proper sized conductors. Assembly should be complete in September.

POINT MARKING

Laser system has not been received from vendor since its' repair. Checkout at vendor's facility proved the need of a very clean, cooling medium, blown through laser head. The highly reflective surfaces forming the elliptical cavity were filthy, making crystal pumping difficult for the lamp. Vendor suggests dry nitrogen be used in place of compressed air because of its very low dew point (a measure of moisture content), and low dirt content. Changing gas cylinders will be a small inconvenience compared to dismantling the laser cavity and realigning laser head. We believe the compressed air cannot be cleaned, cooled, and dried adequately for long laser service.

Work To Be Completed

1. Complete experimentation and development work in film holddown system and point marking.
2. Follow up and assist manufacturing and purchasing phases.
3. Complete all possible subassemblies.
4. Complete schematics and wiring diagrams.
5. Checkout completed subassemblies where possible.
6. Get system tests under way.

STAT

STAT

ATTACHMENT I to [redacted] Progress Report #552 - OD-209
dtd 19 September 1964

REVIEW OF MEETING

Date: August 17, 1964
Job: #552 and #552A

HOLDDOWN

Manifolds - Discussed trouble placing molds and obtaining finished parts.

Glass Plates - One set with, one without microgrooves for demonstration of visibility are being secured.

JOYSTICK

What return mechanism? Stated reduced rate on return springs was a part of solution. Mock-up of return scheme not to be used.

Questioned rotation lock, but would like to see effect in use. Digidials on right and left channel could point to same eye place.

INSTALLATION DATA REQUESTED

Discussed RFI needs. None known by customer.

LOW POWER FIELD LENS

Customer shown mechanism.

STAT

ATTACHMENT I - #552 - OD-209

DELIVERY OF UNITS

Stated several problems causing uncertainty of equipment delivery:

Fiber Cables
Gear Box
Proof of circuit performance

At least four (4) weeks delay seen in delivery date.

FILM DRIVE

Found load and free wheeling of spools not acceptable. Drag on spindles not favored as an overrun control measure.

OPTICS

Noticed ghosts and flare surrounding dot reticle. enough brake.

MICROGROOVES

Showed polished groove sample. Customer noted improvement.

EYEPIECE θ MOTION

Customer still dislikes stickey operation and would like a solution. We will change gear ratio.

EYEPIECE Z MOTION

Wants to know what the solution will be here.

ENCODER FOR NAVY 552A[illegible]

We will submit a letter stating action thus far on choice of encoder.

STAT

ATTACHMENT I - #552 - OD-209

387 SCHEMATICS (For Latest Circuit)

To be forwarded.

POINT MARKING

Number and point mark would be acceptable, with point only and flag only available when easily switched. To get number, point mark and flag; two shots will be required.